MEDIVATORS®

CER™

Endoscope Reprocessing System

CER-1 / CER-2

(MV-1 / MV-2)

(CLM-5001X / CLM-5002VX)

Endoscope Reprocessor

User / Service Manual

C ETL LISTED US

Intertek

MEDIVATORS

A Cantel Medical Company

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Explanation of Symbols

Note: This information adds additional insight and/or instructions for a specific topic.

Caution: This information is an alert to the possibility of a problem with the device associated with its use or misuse.

Warning: This information is an alert to the possible injury or other serious adverse reaction associated with the use or misuse of the device.

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1 WARNINGS AND PRECAUTIONS

1.1 Warnings

- Follow recommended standards as referred by ASTM, ASGE, SGNA, and APIC.
- Follow endoscope/accessory manufacturer's instructions for reprocessing.
- Read all precautionary labels on all models of CER-1 and CER-2 before using.
- Ensure that fluid is not sprayed on personnel, electrical fixtures or patients. Do not point the distal tip of an endoscope toward personnel, electrical fixtures or patients.
- Allow operation of the disinfector only by those individuals trained in its proper use.
- Failure to properly clean and disinfect an endoscope after each examination can compromise patient safety.
- Patient debris and disinfectants are hazardous. Wear the appropriate personal protective equipment.
- All disinfectants must be monitored for effectiveness and should be tested before each endoscope reprocessing cycle. Strictly follow the disinfectant manufacturer's labeling, or the reuse life could be significantly affected. Do not use disinfectants beyond the time period specified on the manufacturer's label (e.g., do not use a 28-day disinfectant beyond 28 days — **even** if potency test results are favorable). Disinfectants may lose effectiveness before the end of the reuse life.
- Endoscopes should be leakage tested before submersion as part of the overall reprocessing protocol.
- After discarding used disinfectant, rinse and wipe dry the cover, basin, and reservoir with a clean non-linting cloth. **Do not use** paper towels: use of paper towels may generate particulate matter that may interfere with the system's function.
- Do not open the lid during operation.
- *Medivators* supplied replacement parts and filters must be used to assure proper operation and efficacy of the reprocessors. Failure to uses the correct filters and parts may adversely affect endoscope disinfection.
- **Do not use high-level disinfectant, neutralizing agents in the reprocessor.** If neutralization of disinfectant is required for your facility, it must be transferred to an alternate container. Neutralizing agents will adversely affect the performance of the reprocessor.

Note: Always TURN OFF the water supply at the end of the day!

1.2 Precautions

- Medivators recommends use of a detergent with the following properties:
  Bacteriostatic properties to inhibit bacterial growth.
  Low foam properties for effective recirculation.

- Do not use regular kitchen detergent for the following reasons:
  Kitchen detergent may contain bacteria.
  Kitchen detergent is not capable of inhibiting bacterial growth.
  Kitchen detergent is not easily diluted with water and may clog the lines and valves.

- Select a liquid chemical germicide (LCG) whose label indicates that it may be used to achieve high-level disinfection (see Section 9, Glossary) of medical instruments. Consult the product's label for the appropriate high-level disinfectant contact time for the disinfection cycle.

- LCGs are:
  Used to achieve high-level disinfection.
  Cleared for market by the FDA as "sterilant/disinfectant".
  Used according to the time, temperature, and dilution recommended by the disinfectant manufacturer for achieving high-level disinfection.
  These conditions usually coincide with those recommended by the disinfectant manufacturer for 100% kill of *Mycobacterium tuberculosis*.

- Choose a non-foaming disinfectant. Some disinfectants contain high surfactants levels. Such products will produce unacceptable amounts of foam when used in an automatic disinfector. Use the manufacturer's test strips to test the potency of the high-level disinfectant before each endoscope reprocessing cycle. If the minimum effective concentration (MEC) of the high-level disinfectant is below its minimum, discard and replace with fresh high-level disinfectant.

- Use the manufacturer's test strips to test the potency of the chemical's MEC.

- Efficacy is directly related to a thorough and meticulous cleaning process followed by complete exposure to an LCG used as a high level disinfectant.

- All endoscopes must be pre-cleaned. Follow the endoscope manufacturer's instructions and established professional guidelines (see Section 1.3, Guidelines for Cleaning and Disinfection) for guidance concerning those reprocessing steps that must be performed prior to placing an endoscope into an automated disinfector.

1.3 Guidelines for Cleaning and Disinfection

Always follow established professional guidelines for cleaning and disinfection of endoscopes. Develop a protocol based on such guidelines.

The following organizations have published recommended guidelines:

Society of Gastroenterology Nurses and Associates
401 North Michigan Av.
Chicago, IL 60611-4267
TEL: (800) 245-7462
FAX: (312) 321-5194
http://www.sgna.org/

American Society for Gastrointestinal Endoscopy
13 Elm Street
P. O. Box 1565
Manchester, MA 09144-1314
TEL: (978) 526-8330
FAX: (978) 526-4018
http://www.asge.org/

Association of Operating Room Nurses
2170 So. Parker Rd., Suite 300
Denver, CO 80231-5711
TEL: (303) 755-6304
FAX: (303) 750-3462
http://www.aorn.org/

British Society of Gastroenterology
3 St. Andrews Place
Regents Park, London NW1 4LB
01144-171-387-3534
BSG@mailbox.u2cc.ac.uk.

Association for Professionals in Infection Control and Epidemiology, Inc
1016 - 16th St., NW., 6th floor
Washington, DC 20036-5703
TEL: (202) 296-2742
FAX: (202) 296-5645
http://www.apic.org/

American Society for Testing and Materials
100 Barr Harbor Drive
West Conshohocken, PA 19428-2959
TEL: (610) 832-9585
FAX: (610) 832-9555
http://www.astm.org/
"Standard Practice for Cleaning and Disinfection of Flexible Fiberoptic and Video Endoscopes used in the Examination of the Hollow Viscera," F 1518-94

Canadian Society of Gastroenterology Nurses & Associates
P.O. Box 366
36 Adelaide Street East
Toronto, Ontario M5C 2J5
www.webray.com/csgna
(No telephone numbers available.
The executives work from hospitals.)

2 INTRODUCTION

All MEDIVATORS endoscope reprocessors are designed and constructed to give years of dependable service. They provide a variety of automated yet variable time settings for reprocessing endoscopes.

It is essential that the user reads and understands this manual prior to using the reprocessor. This manual contains pertinent information for proper care and handling of equipment. Generic reprocessing instructions for various endoscopes are outlined in this manual. However, due to the variety and individual complexities of different types of flexible endoscopes, it is recommended that the user have a working knowledge of cleaning and disinfecting procedures outlined in each endoscope manufacturer's operating manual.

The reprocessor is an automated device used for reprocessing (disinfecting) flexible endoscopes. The device is attached to a water source and a drain. Refer to Section 3.1. The device uses a Liquid Chemical Germicide (LCG) which is held in the reprocessor's reservoir located under the counter or in the optional cart.

Failure to follow the instructions in this manual may result in malfunction, improper reprocessing, or damage to your endoscope as well as possible damage to the reprocessor.

Note: It is especially important that the user follow closely the recommended quality control procedures daily. These procedures are outlined in Section 6.

Production Description

This endoscope reprocessor is available in the following basic models:

- CER-1 Single endoscope reprocessing capability
- CER-2 Dual endoscope reprocessing capability

This User/Service Manual applies to the following models:

- CER-1/MV-1/5001X (All referred to as CER-1 throughout the manual.)
- CER-2/MV-2/5002VX (All referred to as CER-2 throughout the manual.)

- Filtration system - Certified bacteria retentive grade, water filtration system to provide USP grade sterile water for rinsing.

- Transfer Pump - Pump to transfer LCGs in or out of the chemical reservoir, minimizing staff exposure to chemical vapors.

2.1 Specifications

Dimensions

Chassis Dimensions (height - width - depth)	14 X 22 X 20-inches 36 x 56 x 51cm	31-inches with lid open 79cm

Weight

CER-1 Weight (approx.)	66 lb 30 kg
CER-2 Weight (approx.)	70 lb 32 kg

Electrical Requirements

Electrical	110 VAC 60 Hz, 2.5 amp, 1ϕ 220 VAC 50 Hz, 2 amp, 1ϕ
Fuses	110 VAC – One 4.0 amp slo-blo fuse 220 VAC - Two 2.0-amp slo-blo fuses (located in the power module)
Power Cord	Hospital grade – 10 feet (2.4m) Removable

Storage and Transportation

Maximum Humidity	80%, non-condensing
Temperature	41°F - 158° F (5°C – 70°C)
Altitude	Up to 2000 meters

Safety

Classification:	1, Ordinary protection
	The reprocessor is not suitable for use in the presence of a flammable anesthetic mixture with air or oxygen or nitrous oxide.
Installation over-voltage	Category: II
Pollution Degree	2

Accommodates:	All fully immersible endoscopes
Method of Reprocessing Endoscopes:	• External surface immersed in high-level disinfectant. • Internal channels purged by forced fluids.
Environmental Rating	Standard
Mode of Operation	Continuous
Degree of Mobility	Counter top or cart mount
Basin capacity	4 gallons (15.1L) Model CER-1 5 gallons (18.9L) Model CER-2
Reservoir capacity	5 Gallons

2.2 Special Features

- The CER-1 has one **channel connector** for each of the internal endoscope channels.
  This results in maximum flow through channels regardless of difference in channel sizes.

- The CER-2 is capable of reprocessing two endoscopes with additional connectors.

- All fluids pumped continuously during fluid cycles.
  8-10 psi per channel
  8.5-10 ml/sec flow rate

- All fluid cycles are followed by **air purge cycle** to clear internal tubing and channels of all fluids.

- Complete disinfection of ALL internal fluid lines.

- **Available rinses**
  Two or three fresh water rinses follow high-level disinfectant cycle depending on LCG used.

- **Disinfectant reservoir**
  Allows visual inspection of the amount of high-level disinfectant.
  High-level disinfectant easily accessible for testing.
  Reservoir can be removed for cleaning.

- **Closed system minimizes fumes**
  Data on file reports less than 0.04 ppm glutaraldehyde vapor during normal operation of unit. (below established TLV of 0.05 ppm)
  Minimal worker exposure
  High-level disinfectant can be pumped directly into and out of the reservoir for disposal of high-level disinfectant into containers rather than into the drain, using optional automated transfer pump.

- **Water filtration system**
  Prefilter - 1 micron
  Postfilter - 0.2 micron (Certified bacteria retentive grade filter)

3 PLUMBING and ELECTRICAL SPECIFICATIONS

3.1 Water Supply

- Water flow rate into reprocessor is a minimum of 2 to 3 gallons (7.6L to 11.3 L) /minute.

- Water pressure: Minimum 40 psi (2.8 bar)
- Maximum 60 psi (4.1 bar)

- Temperature: Water supply [not to exceed 110°F (43.8°C)]

Note: Endoscope manufacturers recommend that endoscopes not be exposed to temperatures above 130°F (55°C).

- A shut off valve is recommended.

- The water inlet fitting on the reprocessor and on the pre-filter side (water inlet side) of the water filtration system is ¾-inch male hose thread. All reprocessors and prefilter systems are supplied with a ¾-inch female thread, 5-foot, flexible, stainless hose.

- All tubing necessary to connect the water filtration system to the reprocessor is included with the system. The water filtration system can be installed in-line.

- The water supply can tee off the supply under a counter or can be a dedicated line.

- Local plumbing regulations vary regarding installation of:
  Vacuum breakers for the water inlet.
  Backflow protection for the drain.

Note: MEDIVATORS recommends that the user check local regulations regarding anti-siphon valves and vacuum breakers before attempting to install any reprocessor models.

Note: Always TURN OFF the water supply at the end of the day!

3.2 Drain

- A 1 1/2-inch drainpipe placed at least 1-foot below the drain fitting of the reprocessor with no loops is necessary to ensure complete draining of fluids from the system.

- The drain fitting on the reprocessor is 1 1/4-inch OD with ¾-inch ID pipe thread. It is recommended that the reprocessor be installed with a 4-foot flexible drain hose supplied with each reprocessor.

- Consult with local plumbing regulations for information regarding backflow protection for drain.

3.3 Electrical Requirements

1. All Reprocessor models:

   - The following power is required for each of the following:

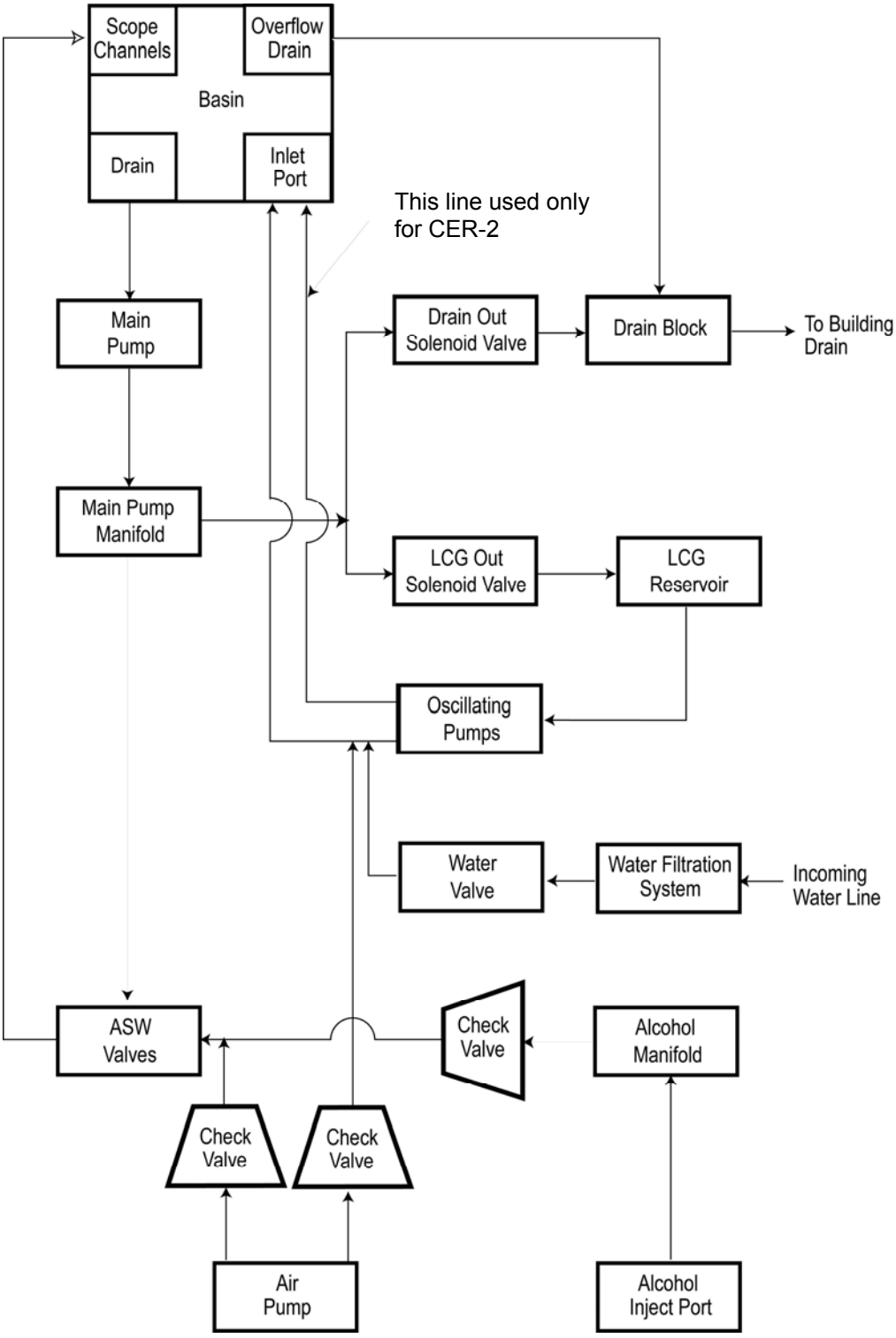
110V Reprocessors			
Model	Voltage	Current	Fuse Size
CER-1	110VAC	2.5 amps	4.0 amp, 250V Slo-Blo
CER-2	110VAC	2.5 amps	4.0 amp, 250V Slo-Blo
Transfer Pump (optional)	110VAC	0.50 amps	1.5amp, 250V Slo-Blo
Heater (Optional)	110VAC	3.5 amps	5amp, 250V Slo-Blo
Total current for one model of 110VAC. Reprocessor and all 100VAC attachments: 6.5 amps			

220V Reprocessors			
Model	Voltage	Current	Fuse Size
CER-1	220VAC	2 amps	(2) 2 amp, 250V Slo-Blo
CER-2	220VAC	2 amps	(2) 2 amp, 250V Slo-Blo
Transfer Pump (optional)	220VAC	0.25amps	1.5amp 250V Slo-Blo
Heater (optional)	220VAC	1.6amps	2amp 250V Slo-Blo
Total current for one model of 220VAC. Reprocessor and all 220VAC attachments: 3.85 amps			

Note:

- MEDIVATORS recommends that surge protectors be used for protection against power spikes and surges.
- A Hospital Grade electrical cord is supplied with each machine.
- If the outlet is adjacent to the water supply, a ground fault interrupter should be used.

3.4 Plumbing Schematic



CER Flow Diagram

4 INSTALLATION

4.1 Specifications

- COUNTER TOP INSTALLATION
  All models
  Counter top must be a minimum of 24-inches (61cm) deep. It is necessary to cut two, 2-inch (5.1cm) holes in the counter top to allow passage of the drain pipe and chemical reservoir tubing from under the counter. Two additional holes are necessary if the water inlet and electricity are under the counter.

- CART MOUNTED INSTALLATION
  All models
  The design of the cart provides easy access to the chemical reservoir tubing and the reprocessors electrical cords.

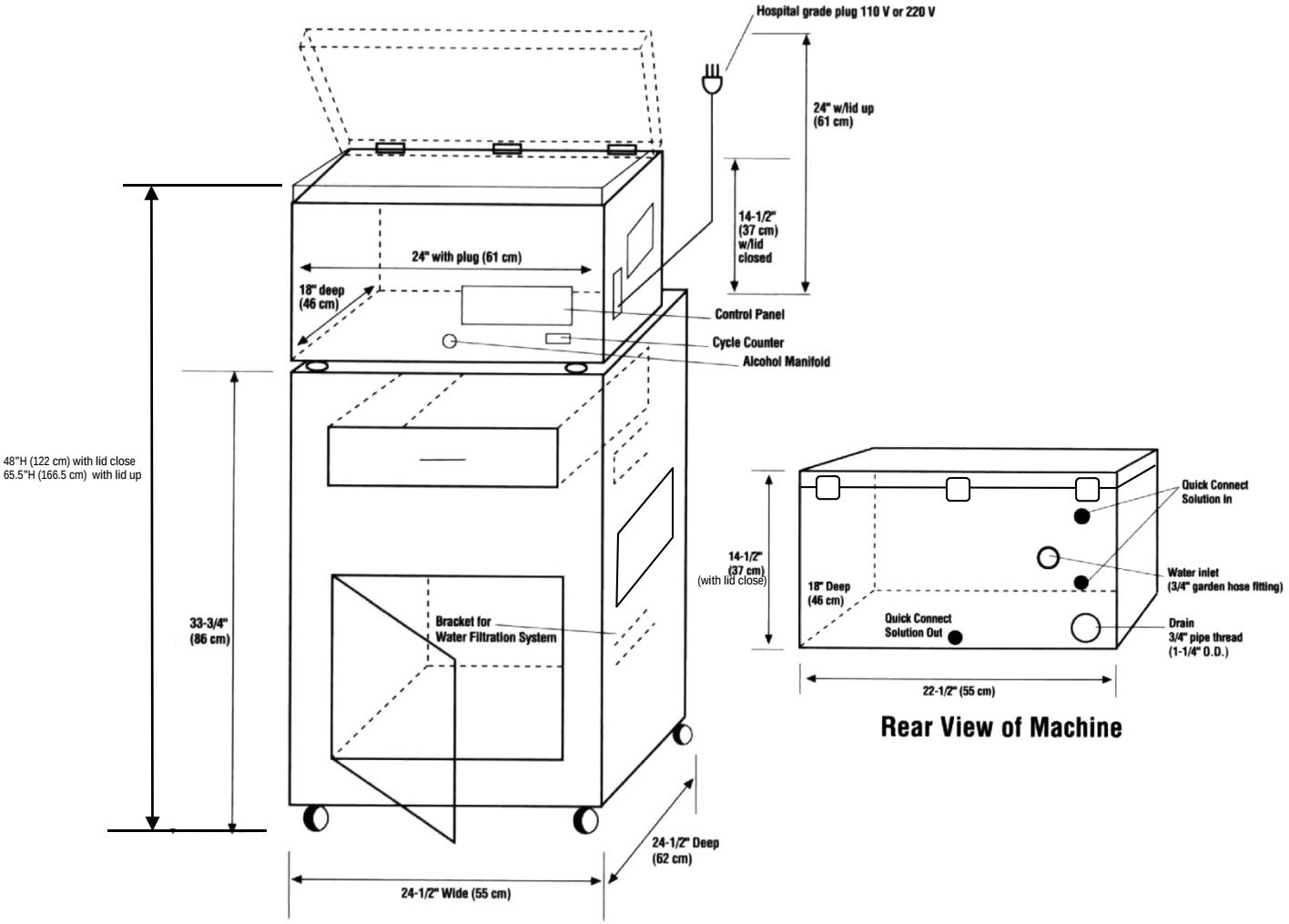


Figure 2. Reprocessor Specifications

4.2 Water Filtration System

1. Connection of Filtration System to the Water Source.

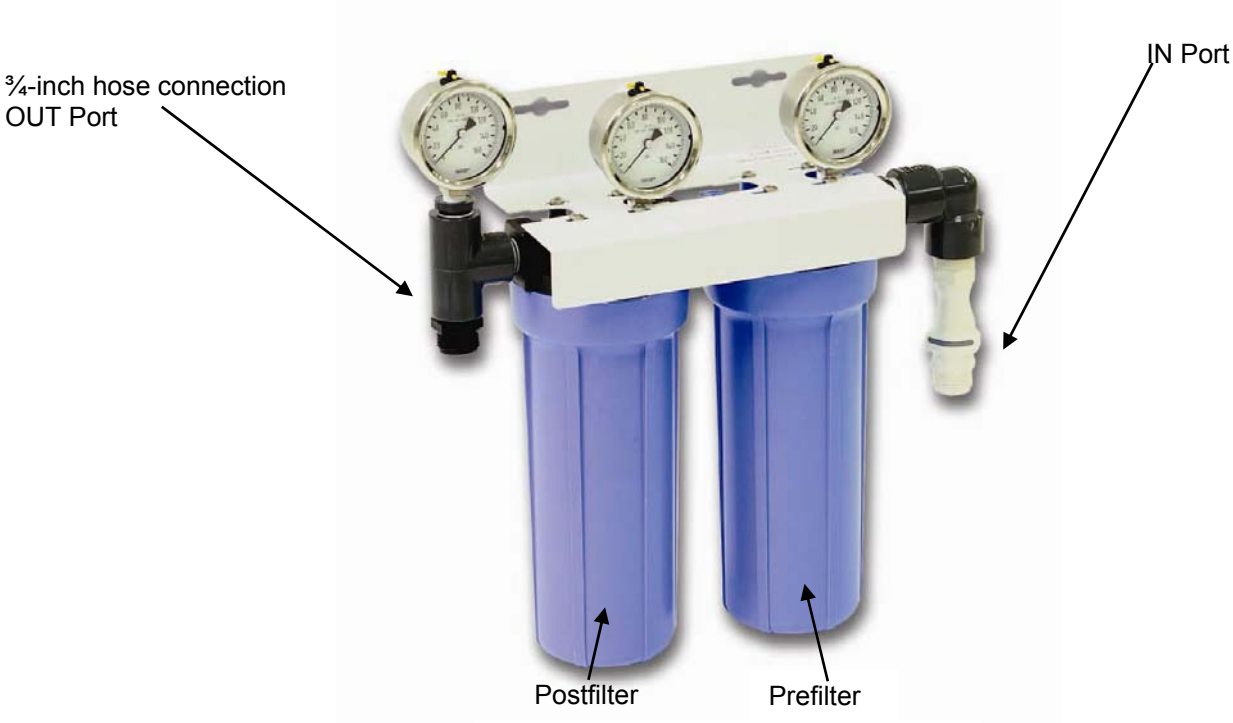


Figure 3. Water Filtration Unit

- Tap into the water line. This must be done by qualified personnel.

> **Note:** The accessory box contains: Water hose
> Filter Wrench
> Male quick connect

- Attach the provided male quick connect to the water line.
- Connect the water line to the female quick connect fitting on the pre-filter side of the filtration system. Refer to Figure 3.

2. Connection of the filtration system hose to the reprocessor.

- Connect the provided stainless steel hose between the hose fitting on the post filter side and the blue hose fitting on the back of the reprocessor.

3. Installation, Sanitization and Maintenance of Water Filtration System.

Note: Water filters must be replaced every three to six months depending on water quality. A pressure differential across the gauges of 5 psi or more indicates a need to replace one or both filters. MEDIVATORS supplied replacement parts and filters must be used to assure proper operation and efficacy of the reprocessors. Filters must be dry at the time of installation. For replacement filters, call your local representative or Medivators Customer Support (1-800-444-4729).

- Turn OFF the water supply to the system at the source.
- Press START to remove pressure from the housings.
- Press the STOP button.
- Remove the filters and clean housings using soap and water and then rinse thoroughly.
- Place the pre-filter into the pre-filter housing. Both ends of this filter are open.
- Place the 0.2-micron post-filter into the blue post-filter housing with the orange O-ring UP and the closed end DOWN. You may need to moisten the O-ring with water or water based lubricant. Make sure that the O-ring is at the top and fits tightly onto the peg in the top of the housing.

- Using the Liquid Chemical Germicide Transfer Pump.

  - Screw the housings into the bracket. Make sure that the filters are well seated into the peg in the lid of the housing. If the pre-filter and the gasket are not properly seated, the housing will not screw into the bracket.

  - Disconnect the water line from the inlet side of the filtration system.

  - Connect the outlet of the transfer pump to the inlet side of the filtration system.

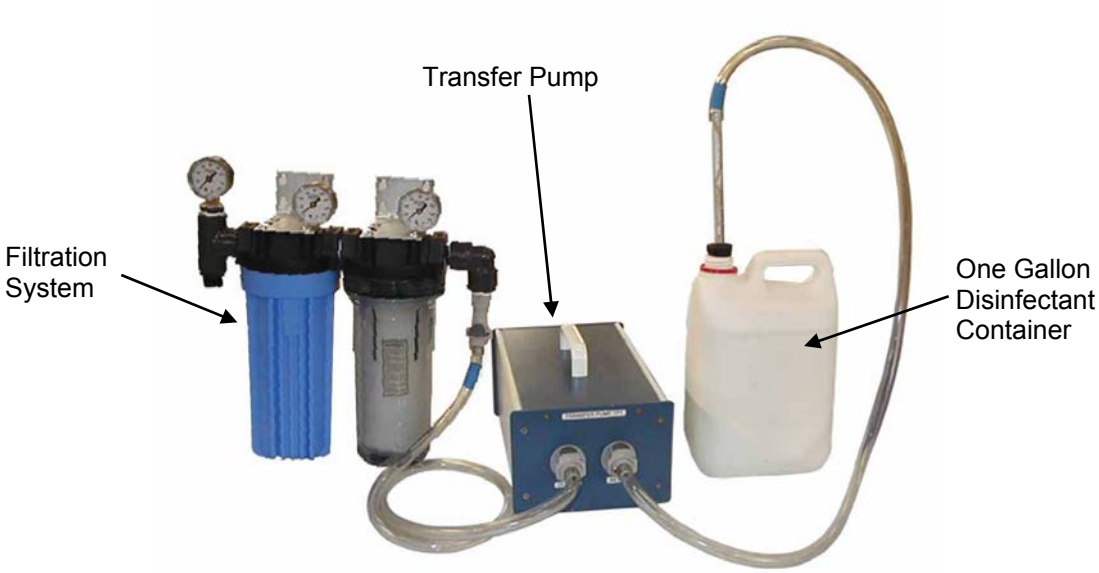


Figure 4. Transfer Pump Connected to Prefilter and Solution

  - Insert the inlet tubing of the transfer pump into a one gallon disinfectant container.

  - Press START on the reprocessor.

  - Turn the transfer pump ON until the pre-filter canister is filled up and the disinfectant solution starts flowing continuously in the basin.

  - Press the STOP button on the reprocessor.

  - Turn the transfer pump OFF.

  - Allow the filters to soak for the time recommended for the high level disinfectant being used to achieve decontamination/sanitization.

  - Reconnect the water line to the inlet side of the filtration system.

  - Turn the water ON.

  - Press START and allow the wash cycle to run in order to rinse the disinfectant out of the basin. When all of the water has drained out of the sink, press STOP.

- Without using the Liquid Chemical Germicide Transfer Pump.
  - Fill each housing with approximately 40-ounces of high level disinfectant.
  - Screw the housings into the bracket. Make sure that the filters are well seated into the peg in the lid of the housing. If the pre-filter and the gasket are not properly seated, the housing will not screw into the bracket.
  - Allow the filters to soak for the time recommended for the high level disinfectant being used to achieve decontamination/sanitization.
  - Turn water ON.
  - Press START on the reprocessor.
  - As soon as LCG begins to flow into the basin, press STOP.
  - Allow the system to stand filled with disinfectant for the time recommended for the high level disinfectant being used to achieve decontamination/sanitization.
  - Press START and allow the wash cycle to run in order to rinse the LCG out of the basin. When all of the water has drained out of the sink, press STOP.

4.3 Reprocessor Installation

1. Water
   See Section 3.1

2. Drain
   Connect the flexible drain hose to the white drain fitting on the back of the reprocessor and attach the screw clamp.

Caution: For all models:
- The drain must be 12-inches below the drain fitting on the reprocessor.
- Eliminate loops in the drain hose in order for fluids to drain completely.
  - Incomplete draining will result in dilution of LCG and/or inadequate rinsing of medical devices.

3. LCG Reservoir

- LCG Reservoir
  The reservoir can be installed:
  - Under the counter.
  - On the bottom of the custom cart.

Caution: Do not put the reservoir next to the reprocessor. The LCG may seep back into the basin overnight. The reservoir must be lower than the basin.

- Connect the straight fittings of the reservoir tubing to the barbed fittings on the reservoir. It does not matter which tube is attached to which fitting.

- Connect the ends with right angle male quick-release connectors to the quick-release connectors on the back of the reprocessor (labeled Solution/In and Solution/Out). Ensure that they attach firmly - they should " click". Refer to Figure 5.
  It does not matter which tube is connected to which connector.

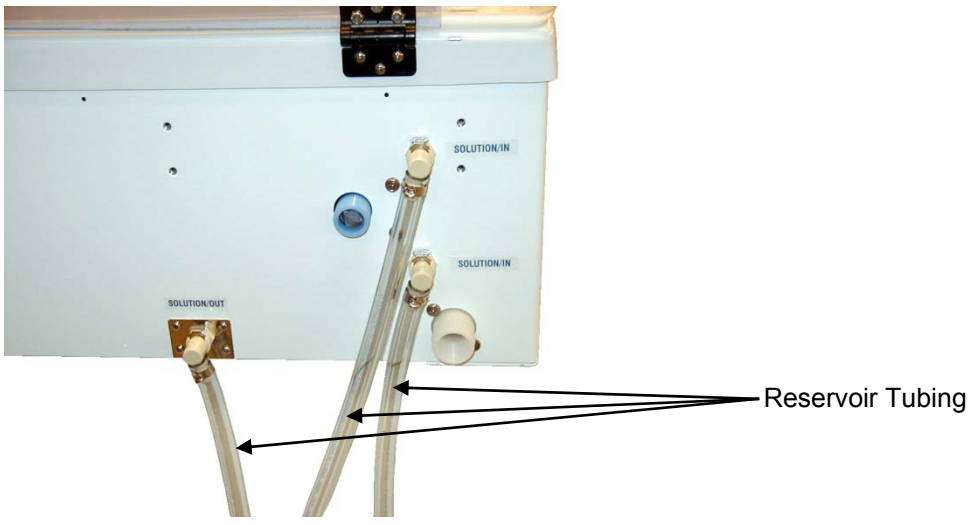


Figure 5. Rear of Model CER-2 Disinfector

4. Electrical Cord
   For all reprocessor models, plug the electrical cord FIRMLY into the power entry module on the right side of the reprocessor. Plug the other end into a standard 110VAC/220VAC outlet.

> **Caution:** MEDIVATORS recommends that for safety, only outlets outfitted with a ground fault interrupter (GFI) be used.

5. Power
   Press the power switch to turn ON the power to the reprocessor.

6. Drain Screen/Drain Cover

> **Caution:** Do not attempt to lift the reprocessor using the drain bar. Sink damage may result.

   Make sure that the drain screen is in place (remove the label that held it in place for shipping). Place the drain cover over the drain screen. It should fit under the drain bar.

7. Channel Connectors
   Attach the channel connectors to the quick-release connections in the basin. Be sure to attach them firmly until they "click".

8. Accessory Bag

   - Place the accessory bag with drawstring into the basin.

> **Caution:** DO NOT place bag over drain screen. Incomplete draining could result. DO NOT hang the accessory bag over the liquid level switch.

Figure 6. Prohibited Accessory Bag Locations

5 OPERATION

Note: The endoscope reprocessor is an effective aid for controlling the spread of disease. Laboratory tests performed to evaluate the effectiveness of the reprocessors automated programs point out that effective reprocessing can only be accomplished by complete manual precleaning of the endoscope followed by exposure to a LCG.

This unit will effectively reprocess most immersible endoscopes available from the different manufacturers. Endoscopes containing an elevator wire channel can be reprocessed in this unit, but special care must be taken to ensure it is properly pre-cleaned, prior to disinfection. It is strongly suggested that the endoscope manufacturer's reprocessing recommendations are properly adhered to.

5.1 Power

The power switch for all models of the endoscope reprocessor is located on the right side of the unit.

Caution: Turning the power ON and then OFF during a cycle will reset the reprocessor to the beginning of the automatic full cycle. To avoid an overflow, any fluids remaining in the sink must be either returned to the reservoir or manually drained before restarting.

5.2 Water Supply

Note: Always turn off the water supply at the end of the day!

The water supplies should always be turned on at the start of the day, and shut off at the end of the day.

5.3 Heated Disinfectant Reservoir Option
(for use with heated disinfectant)

Note: There is a temperature loss of at least 2ºC between the disinfectant reservoir and the reprocessing basin, therefore it is essential to initially set the disinfectant reservoir temperature 2ºC higher than the disinfectant label instructions, then confirm the temperature of disinfectant in the basin using the (supplied) basin thermometer.

1. The digital temperature controller can be set between the ambient temperature and a maximum of 51ºC. It is important that the temperature is set 2ºC higher than the disinfection temperature recommended by the disinfectant manufacturer (for RAPICIDE 35ºC).

2. The heater temperature can be adjusted in one degree increments by turning the set point knob. Turning the knob clockwise will increase the temperature; counterclockwise will decrease the temperature. The LED display will indicate the temperature that has been selected and the window next to the ºC marking should be illuminated to indicate degrees Celsius (figure 8).

3. To display the actual temperature of the disinfectant in the reservoir, press and hold the "PROCESS" button, which is next to the set point knob. Release the button to revert to the "SET" temperature.

4. There is a port cap incorporated into the top of the reservoir. This port can be used to allow the insertion of a test strip to test the efficacy of the disinfectant. A hemostat has been provided to facilitate insertion and withdrawal of the test strip (figure 7).

Figure 7

Figure 8

5.4 Control Panel

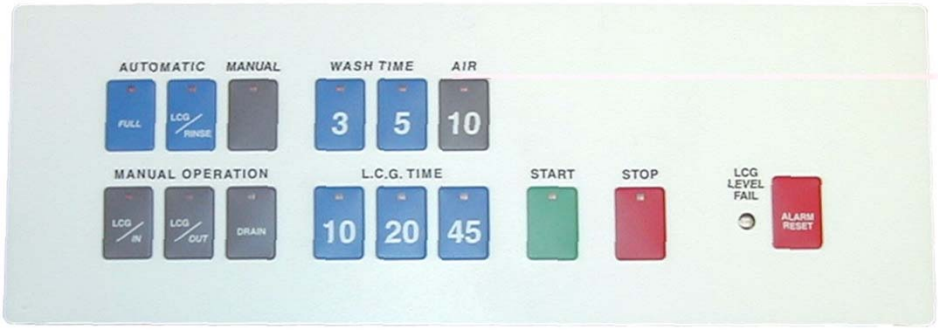


Figure 9. Control Panel *(Glutaraldehyde panel for illustrative purpose only)*

Note: If the unit is supplied for use with RAPICIDE, then the "LCG Time" will be 5, 20 and 45, on the control panel.
If the unit is supplied for use with CIDEX OPA, then the "LCG Time" will be 12, 20 and 45 minutes on the control panel.
If the unit is supplied for use with Glutaraldehyde, then the "LCG Time" will be 10, 20, 45 minutes on the control panel.

Note: In the automatic full mode, the user may select the "WASH TIME" for the detergent phase (3 or 5 minutes), and LCG exposure times (10, 20, 30, 45, 55, 65 and 75 minutes)

- In the LCG/Rinse mode, the user may select the LCG exposure time (10,20,30,45,55,65 and 75 minutes).
- To select any of the above times, press a combination of selection buttons.
  - For example, if 20 minutes is needed, press 20. If 55 minutes is needed, press 45 and 10.
- If the time needs to be changed, the existing time setting must be cancelled after the new time is selected.
  - For example, if the system is already set to 45 minutes and needs to be changed to 20 minutes:
    - Press 20 to select the new time.
    - Press 45 to cancel the original time.

    If 55 minutes is selected and the new selection is 20:
    - Press 20 minutes to select the new time.
    - Press 45 and 10 to cancel the original 55 minutes.

1. Automated Cycles, Refer to Figure 9.
   Control all automated functions (phases).

   - Automatic Full: Sets the program to provide a detergent flush, rinse, LCG exposure, two rinses and a 2 minute air purge. The user may select the time for LCG exposure and wash time.

- LCG/Rinse: Sets the program to provide a 1-minute water purge, LCG exposure, two rinses and a 2-minute air purge. The user may select the time for LCG exposure.

- Detergent Flush: The user may select for 3 or 5 minutes.

- LCG Time: The user may select LCG exposure time.

- 10 MIN AIR: "AIR" can be chosen at the beginning of the "FULL" or "LCG/RINSE" cycles before pressing START which will automatically provide 10-minutes of air when the cycle is completed. If AIR is not chosen at this time, the user may choose 10-minutes of air at the end of the automatic cycle by pressing MANUAL, AIR (10) and START.

2. Manual Functions
   Control LCG in or out, drain and air.

   - LCG/IN: Pumps chemical from the reservoir into the basin.

   - LCG/OUT: Pumps chemical from the basin into the reservoir.

   - DRAIN: Pumps water or chemical from the basin into the drain. MANUAL DRAIN will discard any high-level disinfectant or water in the basin into the drain.

Note: Do not confuse LCG/OUT and DRAIN.
- LCG/OUT will move the contents of the basin into the reservoir.
- DRAIN will discard the contents of the basin into the drain.

   - AIR: Press MANUAL, AIR then START to provide air for 10 minutes.

Note: It is necessary to press START after selecting a manual or automatic function. In order to stop a manual or automatic function, press STOP.

3. START/STOP:

   - START: Starts the selected program.

   - STOP: To stop the reprocessor mid cycle, press STOP. If there is any solution in the basin when cycle is stopped, it MUST BE DRAINED.
     Press LCG OUT, if solution in basin is disinfectant.
     Press DRAIN, if solution in basin is water.

Caution: When START is pressed after a stop, the cycle will start at the beginning of the full automatic cycle NOT WHERE THE CYCLE STOPPED.

Note: The endoscope reprocessor is an effective aid for controlling the spread of disease. Laboratory tests show that effective reprocessing can only be accomplished by manual precleaning of the endoscope followed by exposure to a LCG.

4. LCG Level Verification Circuit and Alarm

This feature is designed to detect and alert the user of inadequate levels of LCG in the basin.

a. The LCG level light and warning buzzer will activate 6-minutes after the LCG cycle fill if:
   - There is an inadequate amount of LCG pumped into the basin during the LCG exposure time.
   - The liquid level switch fails to operate for any reason

b. If the alarm is activated:

   - Record in your log that a failure occurred.
   - Turn OFF the alarm by pressing the ALARM RESET button. (Refer to Figure 9.)
   - Examine the level of LCG in the basin and record for troubleshooting. (This does not have to be exact, simply record whether or not the basin was full of chemical.)
   - Press MANUAL, LCG/OUT, and START. The LCG will be pumped out of the basin and into the reservoir.
   - Allow all of the LCG to be pumped back into the reservoir.

c. Troubleshooting:

   - If the basin was full of high-level disinfectant when the buzzer sounded, check the following:
     - Inspect the white plastic tower that houses the liquid level switch and remove any material covering the sensor.
     - Ensure that the level in the reservoir is at least minimum level.
     - Check hoses for kinks.
     - Ensure channel connectors are fully inserted.
     - Ensure that the machine is level.

Note: For further trouble shooting information, call your local representative or Medivators Customer Support (1-800-444-4729).

- If the basin was not full of LCG after the buzzer sounded, check the following:

  a) Check the level of LCG in the tank.
  There must be 4 gallons (15.1L) of LCG in the chemical reservoir for model CER-1.
  There must be 5 gallons (18.9L) of LCG in the chemical reservoir for model CER-2.

  b) If there was sufficient LCG in the reservoir, check that the connections from the reservoir into the LCG in-ports in the back of the reprocessor are FIRMLY ATTACHED. Check also that there are no kinked tubes from the chemical reservoir to the reprocessor.

  c) Press MANUAL, LCG/IN, and START.
  Verify that the LCG is being pumped through both inlets in the bottom of the basin.

  d) Press STOP.

Note: For further troubleshooting information, call your local representative or Medivators Customer Support (1-800-444-4729).

5. Water Level Verification and Alarm

   This feature is designed to detect and alert the user of inadequate levels of wash or rinse water in the basin during the detergent purge and rinse phases.

   The water level must be high enough to turn the liquid level switch ON within 6-minutes during WASH or RINSE. Low water level will cause the alarm to sound and the two "WASH" LEDs (3) AND (5) will blink indicating inadequate water to completely immerse the endoscope. This feature is not present during the one-minute rinse in LCG/RINSE.

   Caution: The reprocessor will restart at the beginning of the full automatic cycle and not where the failure occurred.
   1. Drain water from sink by pressing MANUAL, DRAIN, START.
   2. Repeat cycle.

   - Turn OFF the alarm by pressing the Alarm Reset button. This will allow the reprocessor to be restarted.

   - Check the water flow into the reprocessor. There must be a minimum flow of 2 gallons (7.6L) per minute at 40-60 psi for the reprocessor to operate properly.

   Note: Inadequate water flow can be caused by a clogged water filtration system. MEDIVATORS recommends changing the pre and post filters every three months but depending on your water source, internal plumbing and other environmental factors. Filters may need to be changed more frequently.

6. LEDs

   The LEDs will blink, indicating the reprocessor's phase. When the cycle is complete, the LEDs will remain ON.

- AUTOMATIC (FULL) CYCLES

LED Status During Full Cycle

Cycle	LED	LED State
Wash	Full	Blinking
	Wash 3 or 5	Blinking
	LCG	ON
	Start	ON
	AIR	ON if chosen

Drain/Air	Full	Blinking
	Wash	Blinking
	LCG	ON
	Start	ON
	Air	ON if chosen

Rinse	Full	Blinking
	Wash	OFF
	LCG	ON
	Start	ON
	Air	ON if chosen

Drain/Air	Full	Blinking
	Wash	OFF
	LCG	ON
	Start	ON
	Air	ON if chosen

LCG/IN	Full	Blinking
	LCG 10, 20 or 45	Blinking
	Start	ON
	Air	ON if chosen

LCG/OUT	Full	Blinking
	Wash	OFF
	LCG	Blinking
	Start	ON
	Air	ON if chosen

Rinse#1	Full	Blinking
	Start	ON
	Air	ON if chosen

- AUTOMATIC (FULL) CYCLES (cont.)

Cycle	LED	LED State
Drain/Air	Full	Blinking
	Wash	OFF
	LCG	OFF
	Start	ON
	Air	ON if chosen

Rinse#2	Same as Rinse#1	

Drain/Air	Full	Blinking
	Wash	OFF
	LCG	OFF
	Start	ON
	Air	ON if chosen

10 MIN Air If chosen at beginning of full cycle.	Full	Blinking
	Air	Blinking
	Start	ON

Cycle Complete	Full	ON
	Wash 3 or 5	ON
	LCG 10, 20 or 45	ON
	Air	ON (if chosen)
	Stop	ON

- AUTOMATIC (LCG RINSE) CYCLES

Cycle	LED	LED State
Pre-rinse	LCG/Rinse	Blinking
	Start	ON
	LCG	ON
	Air	ON if chosen

Drain/Air	Cycle	Blinking
	Wash	Off
	LCG	ON
	Start	ON
	Air	ON if chosen

LCG	LCG/Rinse	Blinking
	LCG 10, 20 or 45	Blinking
	Start	ON
	Air	ON if chosen

LCG/OUT	Cycle	Blinking
	Wash	Off
	LCG	Blinking
	Start	ON
	Air	ON if chosen

Rinse#1	LCG/Rinse	Blinking
	Start	ON
	Air	ON if chosen

Drain/Air	Cycle	Blinking
	Wash	OFF
	LCG	OFF
	Start	ON
	Air	ON if chosen

Rinse#2	Same as Rinse#1	
Drain/Air	Cycle	Blinking
	Wash	OFF
	LCG	OFF
	Start	ON
	Air	ON if chosen

Air	LCG/Rinse	Blinking
	Air	Blinking
	Start	ON

Complete	LCG/Rinse	ON
	LCG 10, 20 or 45	ON
	Air	ON if chosen
	Stop	ON

- MANUAL FUNCTIONS

Cycle	LED	LED State
LCG/IN	LCG/IN	Blinking
	Manual	ON
	Start	ON

Complete	LCG/IN	ON
	Manual	ON
	Stop	ON

LCG/OUT	LCG/OUT	Blinking
	Manual	ON
	Start	ON

Complete	LCG/OUT	ON
	Manual	ON
	Stop	ON

Drain	Drain	Blinking
	Manual	ON
	Start	ON

Complete	Drain	ON
	Manual	ON
	Stop	ON

Air	Air	Blinking
	Manual	ON
	Start	ON

Complete	Air	ON
	Manual	ON
	Stop	ON

5.5 Filling and Draining the Liquid Chemical Germicide Reservoir

Caution: Use personal protective clothing when transferring LCGs.

1. Recommended filling Method.

Figure 10. Chemical Transfer Pump

- Plug the Transfer Pump into a power outlet.

- Connect the Transfer Tube Set between the pump and the old or new style reservoirs. Refer to Figures 8 and 9.
  - Place the rigid end of tube “A” into the solution container and the opposite end to the inlet of the TP-1. If using newer reservoirs with gray ½-inch connectors;
    Connect tube “B” between the outlet of the pump and the reservoir.
    If using older reservoirs with beige 3/8-inch connectors: Refer to Figure 10 and 11.
    Connect the Adapter (to the reservoir connector).
    Connect tube “B” between the outlet of the pump and the adapter.

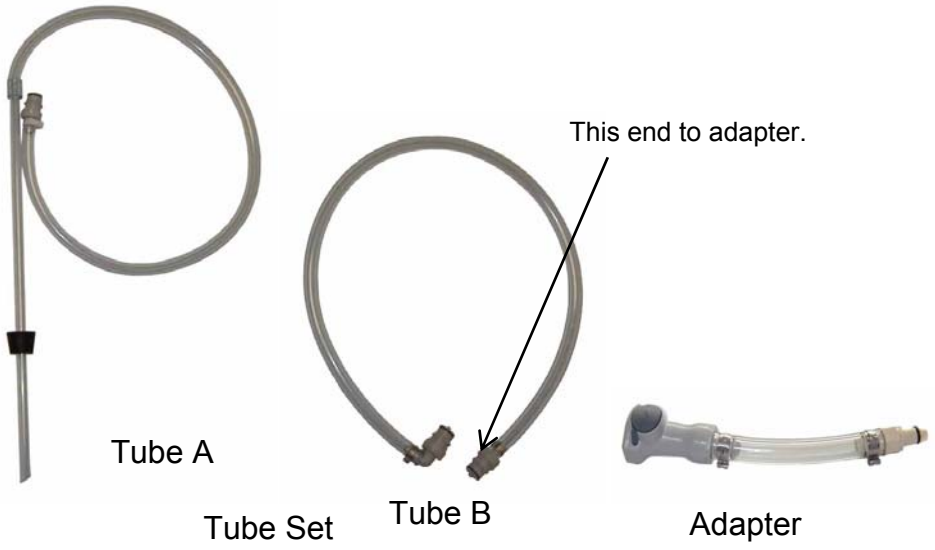


Figure 11. Tube Set and Adapter

- Turn the pump ON at the switch.

Note: Ensure that there are no leaks. If leaks are seen, turn the pump OFF.

Note: There must be 4 gallons (15.1L) of LCG in chemical reservoir of Model CER-1. There must be 5 gallons (18.9L) of LCG in the chemical reservoir of Model CER-2.

- Fill the reservoir until all the LCGs have been transferred and turn the pump OFF.
- Flush the Transfer Pump with clear water. Refer to Step 5.

2. Alternative Filling Method:
   Pour 4 gallons (15.1L) of LCG into the reservoir of Model CER-1.
   Pour 5 gallons (18.9L) of LCG into the reservoir of Model CER-2.

Figure 12. Transfer Pump

3. Empty the reservoir using Transfer Pump and Tube set. Refer to Figures 10 and 11.

> **Note:** Some local, regional, or national agencies require neutralization of the solution prior to disposal. If neutralization is not required, refer to Step 4.

a. Plug the Transfer Pump into a standard power outlet.

a. Connect the Transfer Tube set between the pump and the old or new style reservoirs. Refer to Figure 8, 9 and 10.
   1) Place the rigid end of tube "A" into the drain or solution container and the opposite end to the outlet of the transfer pump.
      - If using newer reservoirs with gray ½-inch connectors:
        a) Connect tube "B" between the inlet of the pump and the reservoir.

      - If using older reservoirs with beige 3/8-inch connectors: Refer to Figure 11 and 12.
        a) Connect the Adapter to the reservoir connector.
        b) Connect tube "B" between the inlet of the pump and the adapter.

b. Turn the pump ON at the switch.

> **Note:** Ensure that there are no leaks. If leaks are seen, turn the pump OFF.

c. Continue to pump until all of the LCG has been pumped out of the reservoir. (You might need to lift one end to remove all disinfectant.)

d. Turn the pump OFF.

f. Flush the Transfer Pump with clear water. Refer to Step 5.

4. Emptying manually.

a. Press MANUAL, LCG/IN, and START.

b. When the disinfectant in the basin has reached maximum fill level, liquid will no longer rise.

c. Press Manual, DRAIN and START.

d. When the disinfectant has been drained from the basin, press STOP.

e. Repeat Step a.
   - When air bubbles begin to form in the basin and all the disinfectant have been pumped from the reservoir, press STOP.

f. Press MANUAL, DRAIN and START.

g. When all disinfectant in the basin have been drained, press STOP.

h. Remove remaining disinfectant from the reservoir using a suction pump or rubber gloves and absorbent lint free cloths.

i. Rinse the disinfectant from the basin and dilute disinfectant in the drain, by turning the reprocessor ON and pressing START. Allow the reprocessor to complete the wash cycle and the rinse cycle if necessary.

j. Press STOP.

5. Flushing the Transfer Pump and all tubing.

   a. Connect the adapter to the Transfer Pump Tubing. Refer to Figure 11.

   b. Place the adapter into the drain.

   c. Connect the remaining end of the tubing to the outlet of the pump.

   d. Connect tube “A” (Figure 11) to the inlet of the pump.

   e. Place the inlet tubing into a container of fresh water.

   f. Turn the pump ON and flush the system with fresh water.

   g. Remove the tubing from the fresh water until all the water is pumped from the tubing.

   h. Turn the pump OFF and disconnect the tubes.

6. Recommended LCGs

Note: It is the responsibility of the reprocessor operator to insure the effectiveness of the high-level disinfectant used.

MEDIVATORS recommends the use of a LCG that:

- Has a 510K approval to market certification from the FDA.
- Is approved for use with flexible endoscopes by the endoscope manufacturer. It is the user's responsibility to ensure that the LCG is used for the proper time and temperature to effect high-level disinfection or sterilization.

MEDIVATORS recommends LCG testing before every reprocessing cycle to ensure an adequate level of active ingredient. Use the manufacturer’s test strips to test the potency of the high level disinfectant. If the minimum effective concentration (MEC) of the high-level disinfectant is below its minimum, discard and replace with fresh high-level disinfectant.

5.6 Prepare Endoscopes for Reprocessing

A manual, thorough cleaning of endoscopes is always necessary immediately after each patient use. Clean within 5-minutes to prevent blood, mucous or other debris from drying. Follow the instructions in the current ASTM guideline, for reprocessing of flexible endoscopes. Always wear the recommended personal protective gear when reprocessing endoscopes.

1. Flush all exterior and interior channel surfaces of the instrument as soon as possible after use. We recommend a medical grade Detergent and Pre-soak.

2. Leak test all immersible endoscopes as required by the manufacturer prior to immersion in fluid.

3. Manufacturers of immersible instruments may require protection of electrical connections prior to immersion. Please consult instrument instruction manual.

4. ALWAYS REMOVE gas sterilization venting cap (ETO venting cap) located at distal end of light guide plug of instrument before immersing. Refer to endoscope manufacturer's instructions.

5. Ensure that waterproof cap is connected to video scopes prior to disinfection.

6. Remove and THOROUGHLY CLEAN by brushing all removable buttons and valves. Rinse with water to remove detergent. Examples: suction control valves, air/water control valves, biopsy inlet seals (forceps channel valve rubber).

7. Place all removable parts in the accessory or bag provided.

8. Use only lint free cloths during precleaning. Do not use gauze, cotton swab, or other lint producing cleaning aids. These products shed fibers which can become caught in the channels of endoscopes or in the components of the reprocessor.

9. Attach channel-cleaning adapters. Refer to endoscope manufacturer's guidelines and Channel Connector Guide for connection of channel connectors for each model of endoscope.

5.7 Place Endoscopes into Reprocessor

1. Load one endoscope into model CER-1. Refer to Figure 16.
   a. Place the control head of the endoscope with the control wheels UP over the drain cover. Loop the insertion tube clockwise and the umbilical counterclockwise.

      The light guide plug will fit in the outside of the dome on a CER-1.
2. Load two endoscopes into model CER-2. Refer to Figure 17.
   a. For two endoscopes, place the first instrument as indicated above.
   b. Attach all channel connectors before loading the second instrument.
   c. Place the head of the second scope with control wheels down; towards the right rear of the basin; to the left of the liquid level tower. Coil the insertion tube counterclockwise and the umbilicus clockwise.

Note: In order to immerse some video endoscopes, it is necessary to place the head of the first endoscope with the control wheels up at the left rear of the basin. The second endoscope can be placed with the head at the left front of the basin with the control wheels down.

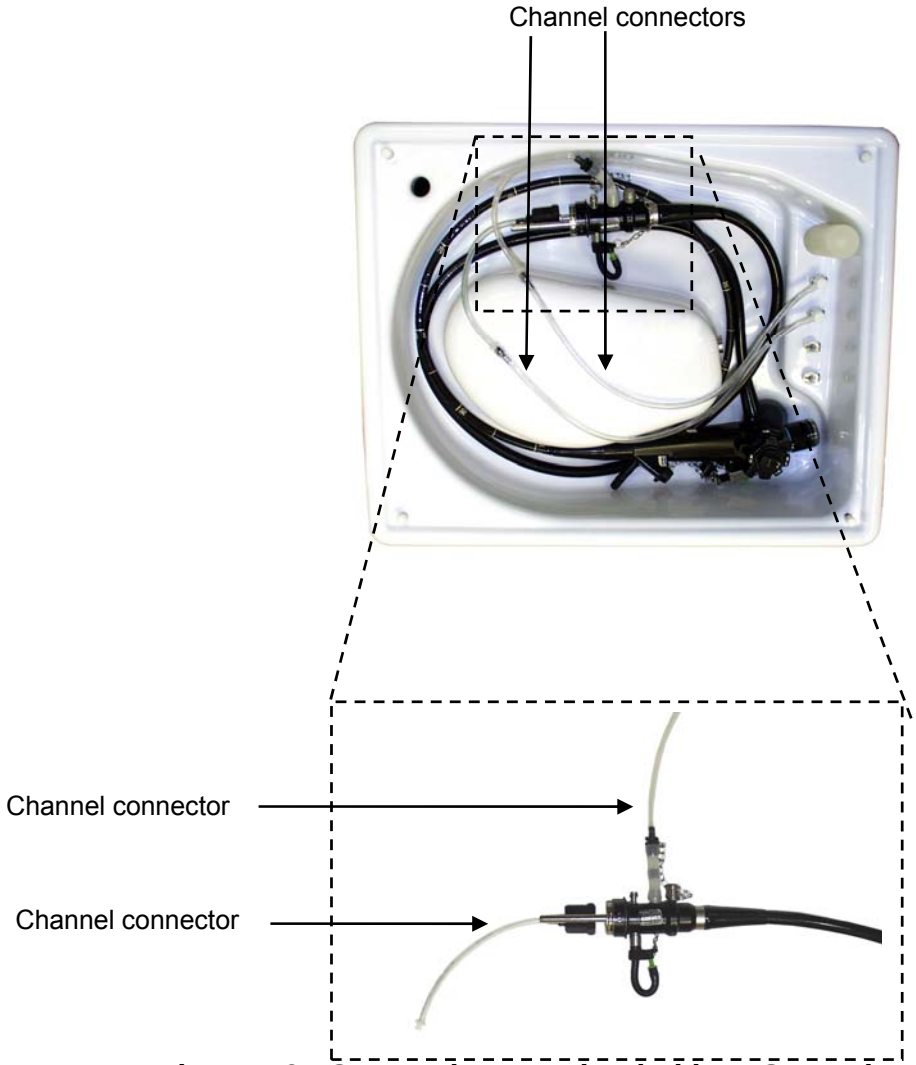


Figure 16. One Endoscope loaded into CER-1 basin.

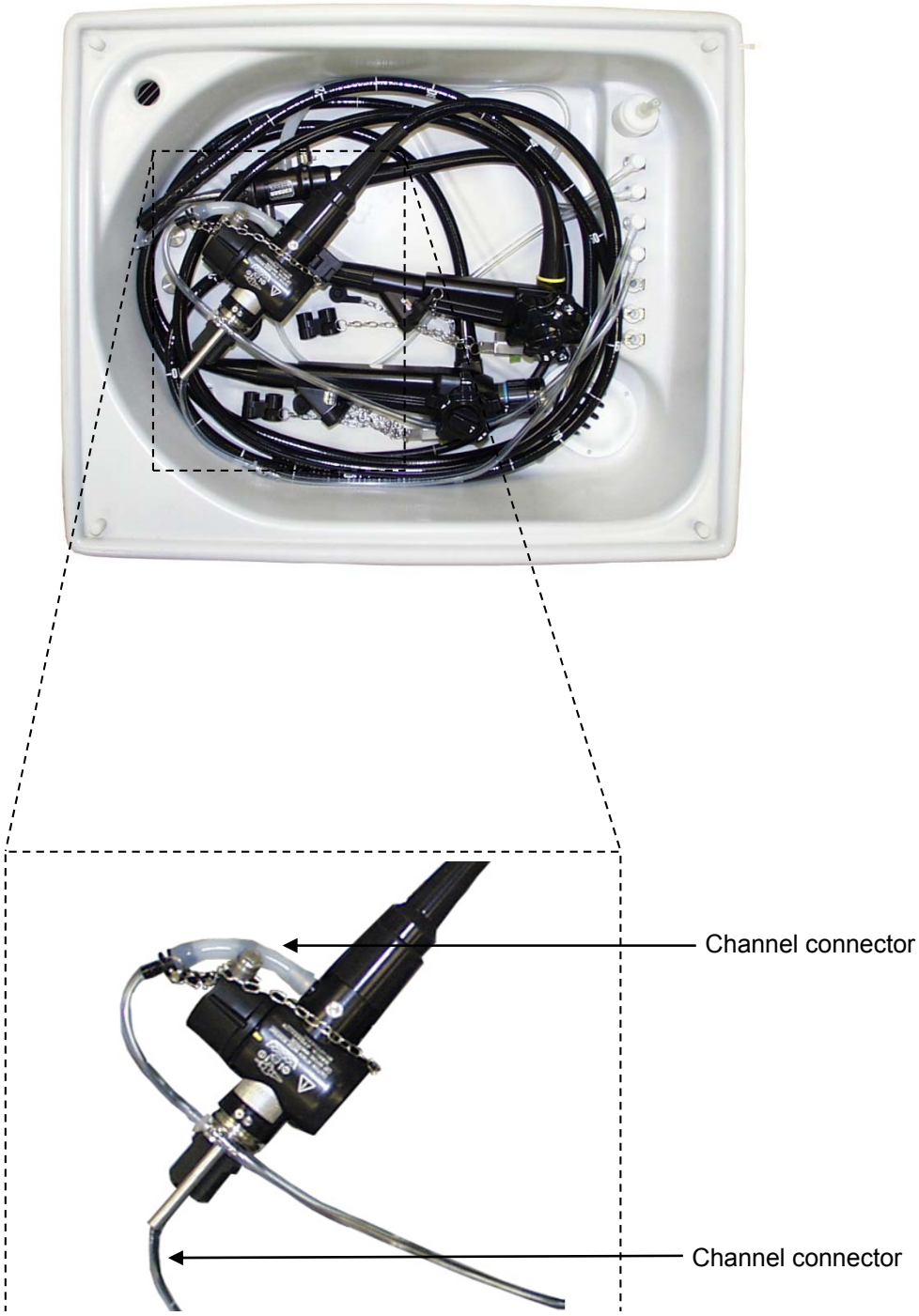


Figure 17. Two Endoscopes loaded into CER-2 basin

5.8 Channel Connectors/Hookups

Each reprocessor comes with a standard set of channel connectors. Each channel connector has a right angle quick-release fitting and 1/8-inch tubing. The right angle quick-release fitting snaps into the quick-release fitting in the basin of the reprocessor.

Channel connectors are detailed in the HOOKUP APPLICATION GUIDE, which can be located at www.medivators.com, under the MEDIVATOR Reprocessing System Header, drop-down Resouce Center, User Library. Refer to the appropriate Olympus, Pentax, or Fujifilm guides for connection instructions and illustrations

Note: Contact your local representative or Medivators Customer Support if further assistance is needed.

Note: Periodically, inspect Hook-ups for damage and/or deterioration and replace as necessary. Damaged, deteriorated, or faulty hook-ups should never be used during an endoscope reprocessing cycle.

5.9 Cycle Selection

Note: Perform quality control procedures daily. Refer to Section 6.

Note: All endoscopes must be precleaned. Follow the endoscope manufacturer's instructions and established professional guidelines (see Section 1.3, Guidelines for Cleaning and Disinfection) for guidance concerning those reprocessing steps that must be performed prior to placing an endoscope into a processor.

Note: If the unit is supplied for use with Rapicide, the "LCG Time" will be 5, 20 and 45, on the control panel.
If the unit is supplied for use with CIDEX OPA, the "LCG Time" will be 12, 20 and 45 minutes on the control panel.
If the unit is supplied for use with Glutaraldehyde, the "LCG Time" will be 10, 20, 45 minutes on the control panel.

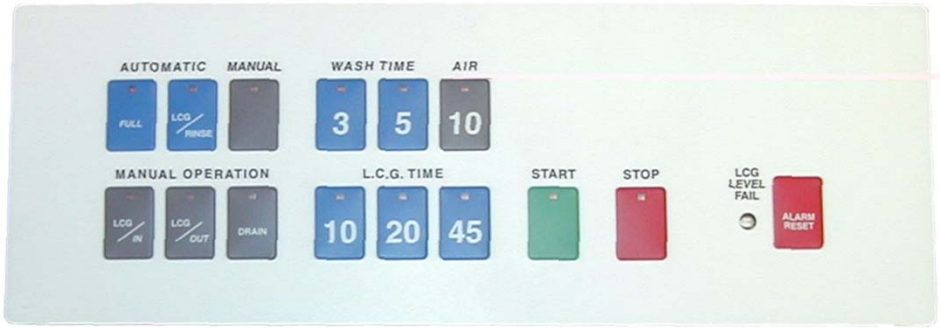


Figure 18. Front Panel (Glutaraldehyde panel for illustrative purposes only)

1. Setting Controls for Automatic Cycle.

   a. Full Automatic:

      1) Turn the POWER switch ON. The red indicator lights will come ON to FULL, 3, and 20. The reprocessor is ready for operation. The program is automatically set to default to full cycle with a 3-minute wash and a 20-minute high-level disinfectant exposure time. This is followed by an automatic rinse cycle and an air purge cycle. Select 5 for a 5-minute wash if desired. Press 10 or 45 (or any combination required for the LCG chosen) to change chemical exposure times

      2) Once the desired times have been selected, Press START. The cycles will proceed automatically.

   b. LCG/rinse:

      1) If after careful cleaning the operator wishes to omit the initial wash and rinse cycle, select LCG/Rinse on the control panel.

      2) Select the desired disinfectant exposure time.

      3) Press START. The cycles will proceed automatically with the desired disinfect time followed by a rinse and an air purge.

Caution: Turning the power switch OFF or pressing STOP during the automatic cycles will cancel all preset programs. When the power is turned ON and the START button is pressed, the reprocessor will proceed with the beginning of the Full Automatic cycle. If the power is turned OFF or goes OFF during a cycle, use the MANUAL controls to remove whatever liquid is in the basin **before** pressing START.

2. Setting Controls for Manual Functions:

   a. Turn POWER switch ON (red indicator light comes ON).

   - Manual:
     Press the MANUAL switch to set manual operation. The red indicator light on the MANUAL button will come ON.
     After selecting a MANUAL function, press START.

   - LCG/IN:
     Pumps LCG from the reservoir into the sink of the reprocessor.

   - LCG/OUT:

Caution: Do not use this control if there is rinse water in the basin. The rinse water will pump into the reservoir causing the reservoir to overfill.

     Pumps LCG from the sink of the reprocessor into the LCG reservoir. Useful for pumping the chemical back into the reservoir.

- DRAIN:
  Pumps whatever liquid is in the sink of the reprocessor down into the drain. **Do not** use when LCG is in the basin unless you wish to discard the LCG.

- AIR:
  Pumps air through all channel connectors and through all internal water line.

5.10 Instructions for Alcohol Flushing Port

Note: Alcohol flushing port is standard on all models.

1. Allow the reprocessor to complete the selected cycle. Leave the endoscopes in the basin with the lid closed.

2. Snap the white quick-release fitting on the Alcohol Flushing Adapter into the quick-release fitting on the front of the reprocessor (labeled "alcohol flushing port").

Caution: Do not inject alcohol until START has been pressed.

3. Fill the Alcohol Flushing Adapter with 60cc of fresh 70% isopropyl alcohol by drawing the alcohol into the syringe through the vertical tubing.

4. Press MANUAL, AIR/10 and then START.

5. After the air has begun to flow, inject the alcohol into the reprocessor.
   For two colonoscopes, *MEDIVATORS* recommends the use of 120 cc of alcohol. For one endoscope or for smaller endoscopes such as bronchoscopes 60 cc is sufficient.

Note:

- This should be done forcefully in order to apply enough pressure to force fluid through the smaller channels such as an endoscope accessory channel.
- Do not interrupt AIR/10 cycle when preparing scopes for storage.

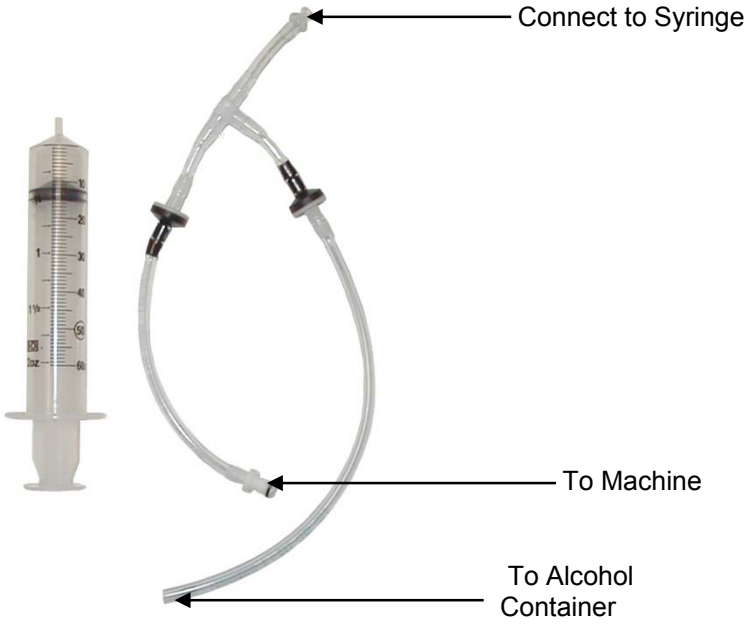


Figure 19. Alcohol Flushing Adapter

5.11 Storing Endoscopes after Reprocessing

Endoscopes should be stored, hanging vertically, in a well ventilated storage cabinet with caps removed. Manufacturers recommend that valves and other removable parts not be inserted until immediately before using the scope.

6. QUALITY CONTROL GUIDE

In order to insure correct operation of the reprocessor, the Quality Control Procedure must be performed prior to the first use of the day.

Maintenance on the unit should be performed whenever the following Quality Control procedures fail to give the expected results.

6.1 Quality Control Procedures

Check Water Flow

Note: Inadequate water flow can be due to clogged valves or to a main pump fault.

1) Attach a channel connector to each port.

2) Turn the POWER ON at the main power switch.

3) Press START. Water will begin flowing into the basin.

4) Wait for pump to begin pumping water through channel connectors.

5) Be sure that water is flowing through each connector.

Note: The water flow will differ depending on the type of connector. Observe the connector with the male luer lock. Flow should be 100 ml (approx. 4oz.) in less than 15 seconds as measured in a graduated container.

6) If water flow in any connector appears inadequate, recheck with a connector with a male luer lock in order to determine if problem is in the connector or machine.

7) Press STOP.

Check Air Flow

1) Press MANUAL, DRAIN, START.

2) While holding all tubing under the water, examine each tube for vigorous bubbling.

3) Allow sink to completely drain of water.

4) Press STOP.

Note: The flow of air and water through the connectors must be checked daily.

Note: Contact your local representative or Medivators Customer Support (1-800-444-4729) if water or air does not flow through all of the channel connectors.

c. Use the accessory bag, drain screen and drain cover at all times.

d. Clean the drain screen.

Note: An increase in the level could mean dilution of LCG. A significant decrease indicates loss of LCG.

e. Examine the level of LCG in the reservoir daily.

f. MEDIVATORS recommends LCG testing before every reprocessing cycle, to ensure an adequate level of active ingredient. Use the manufacturers test strips to test the potency of the high level disinfectant. If high-level disinfectant is below minimum effective concentration (MEC), discard and replace with fresh high-level disinfectant. Choose a non-foaming LCG. Some LCGs contain surfactants. Such products will produce unacceptable amounts of foam when used in an automatic disinfector.

g. Flush endoscope channels with 70% isopropyl alcohol before storage. After reprocessing it is recommended that the channels of the endoscope are flushed with 60 cc of 70% isopropyl alcohol through a syringe followed by a 10-minute air purge to prevent the growth of bacteria from the water.

h. Make certain that channel connectors and the LCG reservoir tubing are not kinked. This will inhibit flow of fluids.

i. Ensure that unattached channel connectors do not fall into the drain screen. This will cause incomplete draining and possible dilution of LCG.

Caution: Never run reprocessor without drain screen in place. Without the screen in place, debris can be recycled into LCG and clog small channels in the endoscope.

j. At least 4 gallons (15.1L) of LCG in model CER-1and 5 gallons (18.9L) of LCG should be in the reservoir at the start of the cycle in model CER-2. Mark the level on the reservoir after filling with LCG. Examine this level daily to insure that the level is not changing significantly.
You must keep a MINIMUM of 4 or 5 gallons in the container at all times depending on model.

k. Recommendations for the disposal of LCG vary between formulations and from location to location. Please follow those recommendations that apply to your situation.
The optional Transfer Pump, pumps LCGs into and out of the reservoir.

l. It is recommended that only LOW FOAMING detergents be used. Follow detergent manufacturer's recommendations for use.

Caution: Do not use a powder detergent. Undissolved powder may block the endoscopes internal channels.

m. Medivators recommends that all units be used with a water filtration unit designed to remove bacteria and debris present in the potable water systems.

n. Do not use gauze, cotton swabs, or other lint producing cleaning aids. These products shed fibers which can become caught in the channels of endoscopes or in the components of the reprocessor.

7 TROUBLESHOOTING GUIDE

7.1 Introduction

If a problem occurs, please use this section to locate the cause. It is best to review main topics to help identify the problem. Listed below are possible solutions to problems which might occur.

Note: Contact your local representative or Medivators Customer Support (1-800-444-4729) if problem is not resolved after using the Troubleshooting Guide.

Problem	Cause	Corrective Action
Rinse alarm triggered	Water valve is closed	Open water valve
	Main water pressure is low	Increase water pressure to 40 – 60 psi
	Filters are clogged	Replace filters
	Water hose is kinked	Remove kink
	Inlet valve screen is plugged	Clean screen
	Float tower is covered	Uncover float tower
	Drain solenoid is leaking	Contact Medivators Customer Support for replacement/repair.
	Water solenoid is defective	Contact Medivators Customer Support for replacement/repair.
	Float sensor is defective	Contact Medivators Customer Support for replacement/repair.
Reprocessor stops in mid-cycle	Fluctuation in power source voltage	Call facility maintenance
	Power cord is not securely connected	Ensure power cord is securely in place
	Alarm is activated	Refer to section regarding alarm
LCG lost through overflow drain	Machine not level	Adjust the machine's leveling feet
	Float tower is covered	Ensure nothing is covering or wrapped around the float tower
	Defective float sensor	Contact Medivators Customer Support for replacement/repair.
Water runs through the overflow or overflows the basin	Float tower is covered and the machine is not leveled	Uncover the float and level the machine using the leg stands
	Machine not level	Level the machine
	Float sensor defective	Contact Medivators Customer Support for replacement/repair

Problem	Cause	Corrective Action
No air flow through channel connectors	Kink in hook up tube	Remove kink
	Channel connector is not fully inserted	Reinsert channel connector
	Check valve inline with alcohol manifold is leaking air	Contact Medivators Customer Support for replacement/repair
	ASW leaking air through main pump manifold	Contact Medivators Customer Support for replacement/repair
	Defective air pump	Contact Medivators Customer Support for replacement/repair
	No power to ASW	Contact Medivators Customer Support for replacement/repair
	Loose internal air pump tubing	Contact Medivators Customer Support for replacement/repair
No fluid flowing through channel connectors	Kink in channel connector tubing	Remove kink in tubing
	Channel connectors not fully inserted	Reinsert channel connectors until they “click” into place
	Main pump not activated by motherboard	Contact Medivators Customer Support for replacement/repair
	Main pump does not rotate	Contact Medivators Customer Support for replacement/repair
	ASWs clogged	Contact Medivators Customer Support for replacement/repair
	Air is flowing instead of fluid	Contact Medivators Customer Support for replacement/repair
LCG not completely filling the basin and/or LCG alarm triggered	Kink in LCG-in tubing	Remove kink
	Reservoir has insufficient solution	Fill reservoir at least to the minimum fill line
	The LCG-in quick connectors are worn or not fully inserted	Replace or reinsert channel connector until it “clicks” into place
	Leaking LCG through the drain	Contact Medivators Customer Support for replacement/repair
	One or more OSC pump not working properly	Contact Medivators Customer Support for replacement/repair
	Float sensor defective	Contact Medivators Customer Support for replacement/repair

Problem	Cause	Corrective Action
LCG reservoir is overfilling or Water is left in basin after rinse cycle	Drain hose is sitting higher than the drain	Lower the drain hose below drain connection on the back of the machine
	Drain hose has a kink	Remove kink
	Drain screen is plugged	Clean drain screen and ensure drain is not blocked
	Basin is not draining fast enough	Contact Medivators Customer Support for replacement/repair
	Mother board not activating rinse drain solenoid	Contact Medivators Customer Support for replacement/repair
	Drain solenoid coil is defective	Contact Medivators Customer Support for replacement/repair
	Drain solenoid is not draining fast enough	Contact Medivators Customer Support for replacement/repair
	Solution out solenoid is leaking water (Only applies for overfilling reservoir)	Contact Medivators Customer Support for replacement/repair
Losing LCG during cycles	LCG lost in the drain	Contact Medivators Customer Support for replacement/repair
	Drain screen plugged	Clean screen and make sure nothing is blocking the drain or Contact Medivators Customer Support for replacement/repair
	LCG OUT quick disconnect is leaking	Contact Medivators Customer Support for replacement/repair
	Fluid collecting in basin	Do not reprocess water bottles, syringes or any containers – they may collect and retain fluid. Contact Medivators Customer Support for replacement/repair
	Solution OUT solenoid not draining fast enough	Contact Medivators Customer Support for replacement/repair
	Machine is not leveled	Contact Medivators Customer Support for replacement/repair
	Motherboard activating drain cycle all the time	Contact Medivators Customer Support for replacement/repair

Problem	Cause	Corrective Action
No lights on control panel	Power cord disconnected	Reconnect power cord
	Switch is turned OFF	Turn ON power switch
	Fuse is blown	Replace fuse
	Motherboard is defective	Contact Medivators Customer Support for replacement/repair
	Control panel is defective	Contact Medivators Customer Support for replacement/repair
	Ribbon cables are loose	Ensure ribbons cables are connected

8 REPROCESSING CYCLE TIMES

Note: All reprocessor models are capable of using **EITHER** the full automatic cycle **OR** the LCG/rinse cycle.

Note: If using the disinfectant chemical CIDEX OPA, then the system will have three rinse cycles after the "LCG IN" cycle. CIDEX OPA requires three complete rinse cycles after disinfectant contact with the endoscope.

8.1 Full Automatic Cycle

Step	Cycle	Minimum Time (in minutes)	Maximum Time (in minutes)
1	Detergent purge	3.0	5.0
2	Drain/Air Purge	2.0	2.0
3	Rinse	Depends on water flow	6.0
4	Drain/Air Purge	2.0	2.0
5	LCG IN	Selection of times 12.5, 22.5, 32.5, 47.5, 57.5, 67.5, 77.5 Glutaraldehyde, Rapicide (5 min/7.5 min) CIDEX OPA (12 min/14.5 min)	
6	LCG/Out/Air Purge	2.0	2.0
7	Rinse	Depends on water flow	6.0
8	Drain/Air Purge	2.0	2.0
9	Rinse	Depends on water flow	6.0
10	Drain/Air Purge	2.0	2.0
11	Air (if chosen)	10.0	10.0

8.2 LCG/Rinse

Step	Cycle	Minimum Time (in minutes)	Maximum Time (in minutes)
1	Rinse	1.0	1.0
2	Drain	1.0	1.0
3	LCG/IN/Circulation	Selection of times 12.5, 22.5, 32.5, 47.5, 57.5, 67.5, 77.5 Glutaraldehyde, Rapicide (5 min/7.5 min) CIDEX OPA (12 min/14.5 min)	
4	LCG/Out/Air Purge	2.0	2.0
5	Rinse	Depends on water flow	6.0
6	Drain/Air Purge	2.0	2.0
7	Rinse	Depends on water flow	6.0
8	Drain/Air Purge	2.0	2.0
9	Air (if chosen)	10.0	10.0

9 Glossary

Alcohol	Used to dry the inside of endoscope channels
High Level Disinfection	Defined by the Centers for Disease Control and Prevention as a process that destroys all vegetative bacteria, viruses, and fungi, but not necessarily all bacterial endospores.
LCG	Liquid Chemical Germicide (High-level Disinfectant)
MEC	Minimum Effective Concentration

10 WARRANTY

Limited Warranty

Subject to the terms below, Medivators Inc. (the "Company") warrants that its products (the "Products") will conform to the Company's written specifications (where applicable) and will be free from defects in material and workmanship under normal use and service for the following periods (the "Warranty Period"):

Endoscope reprocessors and associated equipment, and Irrigation Pumps: fifteen (15) months from date of shipment from the Company or one (1) year from the date of installation, whichever occurs first.

Consumables, accessories, and Product service parts, including, but not limited to, endoscope hook-ups, filters, printers, printer supplies, test strips, accessory bags, and service parts for products: ninety (90) days from the date of installation or one hundred and twenty (120) days from the date of shipment, whichever occurs first.

Disposable Products: warranted for single use. The Warranty Period will not in any case exceed the expiration date on the Product label.

The warranty does not cover, and the Company will have no warranty obligation whatsoever with respect to, any damage to a Product caused by or associated with: (i) external causes, including without limitation, accident, vandalism, acts-of-God, power failure or electric power surges, (ii) abuse, misuse or neglect of the Product by the customer or use of unauthorized third party filters or other consumables and accessories, (iii) usage not in accordance with product instructions, (iv) the customer's failure to perform required preventive maintenance, or (v) servicing or repair not authorized by the Company.

Limitation of Remedy

The warranty obligation of the Company hereunder is limited to (at its option) (i) the repair or replacement of the defective Products or any parts it deems defective, or (ii) a refund of the purchase price. This will be customer's exclusive remedy for a covered defect.

In order to recover under the warranty, the customer must notify the Company in the state (if in the U.S.A.) or the country of installation, of the defect (describing the problem in reasonable detail) prior to the expiration of the Warranty Period and within thirty (30) days of discovery of the defect. Upon receiving the Company's official "Returned Material Authorization" (RMA), the customer must promptly return the defective part or Product to the Company (or the service center indicated on the RMA), freight and insurance prepaid. The Company will not be responsible for any damage during shipment.

Warranty Disclaimer

THE WARRANTY ABOVE IS THE COMPANY'S ENTIRE WARRANTY OBLIGATION TO THE PURCHASER OF PRODUCTS. IT IS IN LIEU OF ALL OTHER WARRANTIES OF THE COMPANY, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, AND THE COMPANY DOES NOT REPRESENT OR WARRANT THAT ANY PRODUCT WILL MEET CUSTOMER'S REQUIREMENTS. THE COMPANY'S RESPONSIBILITY FOR DEFECTS IN A PRODUCT IS LIMITED SOLELY TO REPAIR, REPLACEMENT OR REFUND OF THE PURCHASE PRICE AS SET FORTH IN THIS WARRANTY STATEMENT.

TO THE EXTENT PERMITTED BY LAW, THE COMPANY SHALL NOT, UNDER ANY CIRCUMSTANCES, BE LIABLE TO CUSTOMER FOR CONSEQUENTIAL, INCIDENTAL, INDIRECT, PUNITIVE OR SPECIAL DAMAGES OR LOSSES, INCLUDING WITHOUT LIMITATION, DAMAGES ARISING OUT OF OR IN CONNECTION WITH ANY MALFUNCTIONS, DELAYS, LOSS OF PROFIT, INTERRUPTION OF SERVICE, OR LOSS OF BUSINESS OR ANTICIPATORY PROFITS, EVEN IF THE COMPANY HAS BEEN APPRISED OF THE LIKELIHOOD OF SUCH DAMAGES OCCURRING.

This Warranty gives the customer of Products specific legal rights, and customers may also have other rights which vary from jurisdiction to jurisdiction.

In no event shall the Company's liability exceed the original purchase price of the covered Product.

No representative or agent of the Company has any authority to bind the Company to any other representation or warranty with respect to the Products, and the customer accepts the Products subject to all of the terms above.

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